

# SACA 201 Silver Practice Exam (Sample)

## Study Guide



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## **Questions**

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- 1. The potential difference between two points in a circuit is called \_\_\_\_\_.**
  - A. Current**
  - B. Resistance**
  - C. Voltage**
  - D. Power**
- 2. What is the primary purpose of a transformer?**
  - A. Change AC voltage levels**
  - B. Store electrical energy**
  - C. Measure current flow**
  - D. Act as a switch**
- 3. Where are high-level project requirements captured in Agile?**
  - A. In the Sprint Backlog**
  - B. In a project charter**
  - C. In the Product Backlog**
  - D. In a requirements document**
- 4. What is the key benefit of stakeholder involvement in Agile projects?**
  - A. It minimizes team workload**
  - B. It guarantees project completion on time**
  - C. It enhances product relevance and user satisfaction**
  - D. It avoids the need for testing**
- 5. Which of the following electrical characteristics is not typically measured with a basic digital multimeter?**
  - A. Current**
  - B. Resistance**
  - C. Voltage**
  - D. Frequency**

- 6. How does Agile methodology typically respond to change?**
- A. By sticking strictly to initial plans**
  - B. By incorporating changes at designated phases**
  - C. By embracing changes even late in development**
  - D. By avoiding any adjustments**
- 7. What type of circuit breaker has a delay before it trips?**
- A. Solenoid powered**
  - B. Thermal**
  - C. Spring operated**
  - D. Magnetic**
- 8. A coil that opposes any change in current flow is called a(n) \_\_\_\_\_.**
- A. Oscillator**
  - B. Inductor**
  - C. Capacitor**
  - D. Transducer**
- 9. What does impedance in an AC circuit combine?**
- A. Resistance and capacitance**
  - B. Resistance and inductance**
  - C. Resistance, capacitance, and inductance**
  - D. Capacitance and inductance**
- 10. Electricity is the flow of \_\_\_\_\_ in a conductor.**
- A. Protons**
  - B. Electrons**
  - C. Photons**
  - D. Neutrons**

## **Answers**

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1. C
2. A
3. C
4. C
5. D
6. C
7. B
8. B
9. C
10. B

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## **Explanations**

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**1. The potential difference between two points in a circuit is called \_\_\_\_\_.**

- A. Current**
- B. Resistance**
- C. Voltage**
- D. Power**

The potential difference between two points in a circuit is defined as voltage. Voltage is a measure of the electric potential energy per unit charge between those two points. It essentially represents the force that drives electric charges to move through a circuit, resulting in current flow. In simple terms, when there is a difference in voltage, it causes electrons to flow from a region of higher potential to a region of lower potential, which is fundamental for the operation of electrical devices. Understanding voltage is crucial in the realm of electricity and electronics, as it dictates how much energy is available to perform work in a circuit. It is measured in volts, and the higher the voltage, the more potential energy is available to do work, such as lighting a bulb or powering a motor. In contrast, current refers to the flow of electric charge, resistance is a measure of how much a material opposes that flow, and power is the rate at which energy is used or transferred in the circuit.

**2. What is the primary purpose of a transformer?**

- A. Change AC voltage levels**
- B. Store electrical energy**
- C. Measure current flow**
- D. Act as a switch**

The primary purpose of a transformer is to change AC voltage levels. Transformers are electrical devices that transfer electrical energy between two or more circuits through electromagnetic induction. They primarily serve to step up (increase) or step down (decrease) voltage levels while maintaining the same frequency, which is essential for efficient power distribution across long distances. By adjusting voltage levels, transformers help to reduce energy losses during transmission. Higher voltages are used for long-distance transmission to decrease current, thus minimizing resistive losses in transmission lines. Conversely, they step down voltage levels for safe use in residential or commercial applications. This function is crucial for electrical power systems, as it ensures that electricity can be efficiently transmitted from power generation facilities to consumers. The other options do not accurately represent the primary function of a transformer. For instance, transformers do not store electrical energy, measure current flow, or act as switches; these roles are fulfilled by other devices in electrical systems.

### **3. Where are high-level project requirements captured in Agile?**

- A. In the Sprint Backlog**
- B. In a project charter**
- C. In the Product Backlog**
- D. In a requirements document**

High-level project requirements in Agile are captured in the Product Backlog. The Product Backlog serves as the single source of truth for all work needed on the project, listing features, enhancements, bug fixes, and any other requirements. It is a dynamic and evolving document that is continually refined throughout the project lifecycle, ensuring that the most valuable items are prioritized and addressed during sprints. This approach allows for flexibility and adaptation, accommodating changes in requirements as the project progresses and stakeholders gain more clarity or as market conditions shift. High-level requirements are typically presented as user stories within the Product Backlog, enabling the team to understand the needs and goals of the end-users or customers. Options like the Sprint Backlog focus specifically on tasks and work planned for the current sprint, while a project charter is generally used in more traditional project management methodologies and captures broader project context and goals rather than granular requirements. A traditional requirements document does not align with Agile principles, which emphasize iterative development and flexibility rather than extensive upfront documentation.

### **4. What is the key benefit of stakeholder involvement in Agile projects?**

- A. It minimizes team workload**
- B. It guarantees project completion on time**
- C. It enhances product relevance and user satisfaction**
- D. It avoids the need for testing**

The key benefit of stakeholder involvement in Agile projects lies in its ability to enhance product relevance and user satisfaction. Agile methodologies emphasize collaboration and continuous feedback from stakeholders throughout the project lifecycle. This close engagement ensures that the team is aligned with the users' needs and expectations, allowing for adjustments based on their input. With frequent interactions, stakeholders can provide insights into changing requirements and priorities, leading to a product that better serves its intended purpose. This focus on user needs often results in higher satisfaction and a more successful outcome, as the final product reflects the actual demands of its users. By actively involving stakeholders, Agile teams create opportunities for iterative improvements, ensuring that the product is not only viable but also valuable in real-world applications.

**5. Which of the following electrical characteristics is not typically measured with a basic digital multimeter?**

- A. Current**
- B. Resistance**
- C. Voltage**
- D. Frequency**

A basic digital multimeter is designed to measure several key electrical characteristics, including current, resistance, and voltage. Each of these measurements is fundamental in diagnosing and troubleshooting electrical systems. Current measurement allows you to determine how much electric charge is flowing through a circuit, resistance helps in identifying the opposition to the flow of current, and voltage measurement indicates the electric potential difference between two points in a circuit. These three parameters are essential for understanding how an electrical system operates and ensuring its components function within their specified limits. In contrast, frequency measurement is not a standard feature on basic digital multimeters. While some advanced or specialized multimeters do include frequency measurements, basic models typically focus on the foundational measurements of current, resistance, and voltage. Therefore, frequency, which refers to the number of cycles of an electrical signal per second, is less commonly associated with the capabilities of basic multimeters.

**6. How does Agile methodology typically respond to change?**

- A. By sticking strictly to initial plans**
- B. By incorporating changes at designated phases**
- C. By embracing changes even late in development**
- D. By avoiding any adjustments**

Agile methodology is fundamentally designed to be flexible and adaptive, which is why embracing changes even late in development is a core principle. In Agile practices, teams recognize that requirements and solutions evolve through collaborative effort and that customer feedback can lead to new insights at any stage of development. This adaptability allows teams to pivot and adjust their priorities based on new information or changes in market conditions, ensuring that the final product aligns closely with customer needs and expectations. This approach encourages ongoing dialogue between stakeholders and teams, allowing for continuous improvement and refinement, which is critical in dynamic and fast-paced environments. Agile frameworks, such as Scrum or Kanban, support iterative cycles of development where feedback is actively sought and incorporated, enhancing the overall responsiveness to change. In contrast, adhering strictly to initial plans or avoiding adjustments altogether would undermine the Agile principle of responding to change, as these approaches would inhibit the ability to adapt to evolving project requirements. Incorporating changes at designated phases, while somewhat flexible, lacks the comprehensive responsiveness that Agile champions, particularly as it may limit how changes are handled to predefined intervals rather than embracing ongoing adjustments.

**7. What type of circuit breaker has a delay before it trips?**

**A. Solenoid powered**

**B. Thermal**

**C. Spring operated**

**D. Magnetic**

A thermal circuit breaker operates by using a bimetallic strip that bends when current passes through it, causing the breaker to trip when a predetermined temperature is reached. This mechanism inherently provides a delay because it relies on heat buildup over time to trip. In scenarios where there is a temporary overload (like a motor starting up), the breaker does not immediately trip, allowing for brief surges that are normal during operation. This characteristic makes thermal circuit breakers particularly useful in applications where transient conditions may occur without risking damage. In contrast, other types of breakers, such as magnetic circuit breakers, respond almost instantaneously to overcurrent. Solenoid and spring-operated breakers also typically do not feature the same level of time delay as thermal breakers, which is why thermal is identified as the correct answer in this context.

**8. A coil that opposes any change in current flow is called a(n) \_\_\_\_\_.**

**A. Oscillator**

**B. Inductor**

**C. Capacitor**

**D. Transducer**

A coil that opposes any change in current flow is called an inductor. Inductors operate on the principle of electromagnetic induction, which involves generating a magnetic field when an electric current passes through the coil. This magnetic field creates a back electromotive force (EMF) that resists changes in the current flowing through the coil. When the current through an inductor increases, the magnetic field builds up and induces an opposing voltage, while a decrease in current causes the magnetic field to collapse, inducing a voltage that tries to maintain the current flow. This property of inductors to resist changes in current makes them essential in various applications such as filters, energy storage devices, and in tuning circuits. Oscillators, on the other hand, are circuits that generate oscillating signals and do not specifically refer to a component that opposes current change. Capacitors are components that store electrical energy in an electric field and can influence voltage rather than current directly opposing its change. Transducers convert one form of energy to another and aren't specifically related to opposing current changes. Understanding these distinctions clarifies why the term inductor accurately describes the component in question.

## 9. What does impedance in an AC circuit combine?

- A. Resistance and capacitance
- B. Resistance and inductance
- C. Resistance, capacitance, and inductance**
- D. Capacitance and inductance

Impedance in an AC circuit is a comprehensive measure that combines resistance, capacitance, and inductance. This reflects the overall opposition that a circuit presents to the flow of alternating current. Resistance is the opposition to current flow that generates heat, measured in ohms, and does not vary with frequency. Capacitance, on the other hand, relates to how a circuit stores energy in an electric field, and its effect on the circuit depends on the frequency of the AC signal. Inductance reflects how a circuit stores energy in a magnetic field and also varies with frequency. When these three components are present in an AC circuit, they interact in a way that determines the total impedance. The resistance contributes to the real part of impedance while capacitance and inductance contribute to the imaginary part. Capacitive reactance and inductive reactance are frequency-dependent, and they can counteract each other depending on the nature of the circuit. This intricate relationship is essential for understanding the behavior of AC circuits, including phase shifts and how energy is distributed. Therefore, impedance encompasses all three elements—resistance, capacitance, and inductance—making the combined understanding crucial for analyzing circuit behavior in AC applications.

## 10. Electricity is the flow of \_\_\_\_\_ in a conductor.

- A. Protons
- B. Electrons**
- C. Photons
- D. Neutrons

The flow of electricity in a conductor primarily involves the movement of electrons. In conductive materials like metals, atoms have a structure that allows their outermost electrons, known as conduction electrons, to become free and move relatively freely through the lattice of atoms. This movement creates an electric current, which is essential for the operation of electrical devices. Electrons are negatively charged particles, and when an electrical potential difference (voltage) is applied across a conductor, these electrons are pushed and pulled, leading to a continuous flow of charge. This is in stark contrast to protons, which are bound within the atomic nucleus and do not move freely. Similarly, photons are elementary particles of light and are not involved in the conduction of electricity in materials, while neutrons are neutral particles found in the nucleus of an atom and also do not participate in electrical conduction. Thus, the correct answer highlights the fundamental principle of electricity, emphasizing the role of electrons as the primary carrier of electric charge in conductive materials.